

RAND Research Brief

What Affects Decisions to Enlist in the Military?

20010510 064

The period of drawing down the number of U.S. military personnel is over, and military recruiting targets are rising to keep the force from declining further. However, recruiting efforts must compete for resources (dollars for advertising, bonuses, etc.) within a smaller budget than in predrawdown days, and there have been reports that recruiters are having more difficulty in meeting their goals. Models that predict the enlistment probability of persons with different characteristics could help allocate current resources to target the most likely prospects. The most recent individual-level models of enlistment, however, were estimated using data from around 1980. Since then, many trends and events suggest that the enlistment likelihood of different types of individuals may have changed. These trends include an increase in college attendance, shrinking youth cohorts, rising youth aptitudes, and an increase in the number and scope of deployments. To improve the accuracy of recruiting-resource allocation, RAND researchers Rebecca Kilburn and Jacob Klerman have updated the principal economic model of enlistment decisionmaking with data from 1992 and 1994.

SUMMARY OF FINDINGS

Despite the numerous changes that occurred between the early 1980s and early 1990s, RAND's estimates of individual enlistment decision models generally revealed that important predictors of enlistment at the beginning of this ten-year period remained so at the end. The research uncovered a few new variables that were predictive of enlistment: for high school seniors, an indicator of immigrant status, and for graduates, having a parent in the military or having been arrested (or having a friend who had been arrested). Given that these variables are really just proxies for other underlying concepts, these findings warrant further exploration.

Kilburn and Klerman also aided understanding about the competition that military recruitment faces from college and the labor market. They found a high degree of

substitutability between college and the military for high-quality youth, and between work and the military for other young men. Hence, to attract high-quality youth, recruiting resources should focus on incentives that draw recruits away from college rather than from the labor market. To attract graduates who have clearly chosen not to attend college, the opposite is true.

MODEL AND DATA

The model that Kilburn and Klerman updated¹ is grounded in the economic theory of individual choice. The data are drawn from large, ongoing surveys that follow individual youths over a period of years. Relevant variables include race and ethnicity, aptitude, plans for marriage and education, family income, and various parental characteristics. Other important variables describing labor markets come from the Census Bureau. Finally, enlistment information from survey participants is obtained either from the survey itself or from other sources.

Statistical methods such as logistic regression then permit the specification of an equation in which the probability of enlistment is set equal to the sum of a series of terms. Each term corresponds to a particular characteristic and is the product of a coefficient and the value of that characteristic (e.g., score on an aptitude test). These coefficients express the degree to which changes in the value of the characteristic influence the enlistment probability, and in which direction. Different models are required for high school seniors and graduates, as the characteristics mentioned above have different effects on their enlistment decisions. (Kilburn and Klerman estimated models for young men only, as the data on enlisting women is insuf-

¹See James R. Hosek and Christine E. Peterson, *Enlistment Decisions of Young Men*, Santa Monica, CA: RAND, R-3238-MIL, July 1985, and James Hosek and Christine Peterson, *Serving Her Country: An Analysis of Women's Enlistment*, Santa Monica, CA: RAND, R-3853-FMP, 1990.

ficient to permit estimating coefficients for them with any level of confidence.)

The RAND researchers took three approaches to updating the models:

- They reestimated the earlier model, maintaining the original variables and the same assumed two-way decision to enlist or not, but using the new data to estimate new coefficients.
- They changed the set of variables considered by the earlier model in an effort to derive one that is more useful.
- They changed the form of the model to a three-way representation of a decision to enlist, attend college, or join the workforce.

USING THE SAME VARIABLES

Reestimation of the early-1980s model with data from the early 1990s did not result in as many changes as might have been expected, given the trends mentioned above. Overall, only about a quarter of the coefficients in the equation for seniors and a third of those in the equation for graduates differed significantly from those in the earlier model. As before, variables typically associated with college attendance were the strongest influences on high school seniors' enlistment decisions, whereas variables associated with job opportunities most strongly affected graduates' decisions. Table 1 lists the characteristics that exhibited a statistically significant influence on enlistment decisions of seniors and graduates. Note that "recruiter density," the number of recruiters per potential recruit, is statistically significant only for graduates and has an unexpected effect. This result may be due to the military services' assignment of more recruiters to areas where recruiting has proved difficult and fewer to areas with a history of generating more recruits.

A number of variables have no significant relation to enlistment behavior. In particular, previous studies have found higher enlistment rates for African Americans, which is not the case here. The change is consistent with other RAND research, which has shown a drop in the interest expressed by black youths in joining the military.²

ADDING ADDITIONAL VARIABLES

Kilburn and Klerman also sought to improve the model through the addition of variables relating to immigration and crime. Immigrants have steadily increased

their share of the U.S. population since the early 1980s. Data for enlistees' immigration status were not available; as a proxy, having a first language other than English was used. Crime was also higher, particularly among youths, in the early 1990s than in 1980. Crime is of interest because the military would like to avoid enlisting youths with an arrest record. The crime-related variable indicated whether the youth survey respondent or one of his friends had ever been arrested. In addition, several other variables were added, such as whether the youth had a parent in the military.

Table 1

Characteristics Significantly Affecting Enlistment Probability for Seniors and Graduates

A senior is *more* likely to enlist:

The higher the unemployment rate in his county
If he plans to marry within the next five years
The higher his number of siblings

A senior is *less* likely to enlist:

The more months he's been unemployed
If he has a low wage
If he is Hispanic
The higher his AFQT score
The more educated his mother
The higher his family income

A graduate is *more* likely to enlist:

The more hours he works per week
If he is currently unemployed
The more hours he worked per week on his previous job
If he has been unemployed for a year
If he has ever been married

A graduate is *less* likely to enlist:

The higher his family income
If he lives at home
The more months he has been unemployed
The greater the "recruiter density" in his area
If he has children

NOTES: Not all factors in the model are shown here.
AFQT = Armed Forces Qualification Test, an aptitude measure.

Several of these changes yielded new insights about enlistment probabilities, as shown in Table 2. For seniors, the probability of enlistment was substantially lower for those not having English as a first language. However, given the diversity among immigrant groups in college attendance (among other things), it may be premature to direct recruiting efforts away from immigrants.

For graduates, having a parent in the military significantly raised enlistment probability. This finding suggests potential for recruiting through veterans organizations or other avenues for targeting youths with currently or formerly enlisted parents.

²See Bruce R. Orvis, Narayan Sastry, and Laurie L. McDonald, *Military Recruiting Outlook: Recent Trends in Enlistment Propensity and Conversion of Potential Enlisted Supply*, Santa Monica, CA: RAND, MR-677-A/OSD, 1996.

Table 2

**Effect of New Variables on Seniors' and Graduates
Likelihood of Enlisting**

Variable	Seniors	Graduates
Parent in military	Doesn't matter	More likely
English not first language	Less likely	Doesn't matter
Uses marijuana	Doesn't matter	Doesn't matter
Respondent or friend has been arrested	Doesn't matter	More likely
Average in-state college tuition	Doesn't matter	Doesn't matter

NOTES: "Doesn't matter" means that there is more than a 5 percent probability that the relationship between the characteristic and enlistment behavior is due to chance.

Not all factors in the model are shown here.

A THREE-CHOICE MODEL OF ENLISTMENT

The three-choice model was estimated with a sample that pooled the senior and graduate groups. The most important reason for estimating such a model is that it shows which activities youth are likely to choose if they do not enlist in the military. This is important for designing recruiting incentives because it allows the military to tailor the incentives to draw recruits away from whichever alternative is preferred. For example, if college attendance is preferred, recruiting incentives might want to stress educational benefits or on-the-job training. But if civilian employment is preferred, recruiting incentives might focus on job security, wage comparability, or benefits.

The three-choice model also has the potential of revealing a larger number of significant relations. This is because some variables are positively associated with a decision to attend college instead of enlisting and negatively associated with a decision to work instead of enlisting (or vice-versa). These opposite associations could cancel each other out when estimating a simple enlist-or-not model.

Finally, previous enlistment models included certain variables because of their hypothesized relation to decisions to attend college instead of enlisting or to take a job in the civilian sector instead of enlisting. With this new specification, these hypotheses could be tested directly.

As shown in Table 3, when contrasting the decision to enlist or attend college, there was no significant difference between the probability of choosing one or the other for youths who scored well in the Armed Forces Qualification Test. Hence it may not be aptitude that is driving youths to attend college instead of enlist, but other factors. Kilburn and Klerman found, for example, that availability

of resources to pay for college, mother's education, and early marriage and childbearing are strong predictors of which high-quality youth attended college and which enlisted. For individuals who have chosen not to attend college and are considering working, the upper part of the qualification test distribution might be the most fertile ground for recruiting efforts. We also observe that fewer family socioeconomic indicators affect recruiting decisions for this group, although marriage and fertility do. Among the new variables examined, having a parent in the military, English not the first language, whether the youth or a friend had been arrested, and marijuana use are also important predictors of enlistment in the three-choice model.

Table 3

**Characteristics Significantly Affecting Probability of
Choosing Enlistment Relative to College or Work**

Characteristic	Likelihood of Choosing Enlistment Over:	
	College	Work
Black	More likely	Doesn't matter
High AFQT score	Doesn't matter	More likely
Moderate to low AFQT score	More likely	Less likely
GED	More likely	
Mother's education: less than high school	More likely	Doesn't matter
Mother's education: college degree	Less likely	Doesn't matter
Mother's education: postcollegiate	Less likely	Doesn't matter
Mother worked	Doesn't matter	More likely
Higher family income	Less likely	Doesn't matter
Very low family income	Less likely	Less likely
Higher number of siblings	More likely	Less likely
Higher unemployment rate ^a	More likely	Doesn't matter
Higher per-capita personal income ^a	Less likely	More likely
Higher percent of population black ^a	Less likely	More likely
Higher recruiter density ^a	More likely	Less likely
Expects more education	Less likely	Doesn't matter
Plans to marry within 5 years	More likely	Doesn't matter
Plans never to marry	More likely	Doesn't matter
Ever been married	More likely	Less likely
Has children	More likely	Less likely
Parent in the military	More likely	Less likely
English not first language	Less likely	Doesn't matter
Youth or friend has been arrested	More likely	Doesn't matter
Uses marijuana	Doesn't matter	Less likely

NOTES: "Doesn't matter" means that there is more than a 5 percent probability that the relationship between the characteristic and the behavior is due to chance.

AFQT = Armed Forces Qualification Test. AFQT scores are divided into percentile ranges, with Category I being highest and Category V lowest. In the table, "High AFQT" indicates persons with scores in Category I or II; "Moderate to low AFQT score" indicates persons scoring in Category III to V. Missing value indicators and other variables that were insignificant for both college and work are not shown here.

^aVariable is measured at the county level.

RAND research briefs summarize research that has been more fully documented elsewhere. The research summarized in this brief was carried out in the National Research Defense Institute and the RAND Arroyo Center; it is documented in Enlistment Decisions in the 1990s: Evidence from Individual-Level Data, by M. Rebecca Kilburn and Jacob A. Klerman, MR-944-OSD/A, 2000, 108 pp., \$15.00, ISBN: 0-8330-2708-5, available from RAND Distribution Services (Telephone: toll free 877-584-8642; FAX: 310-451-6915; or Internet: order@rand.org). Abstracts of all RAND documents may be viewed on the World Wide Web (<http://www.rand.org>). Publications are distributed to the trade by National Book Network. RAND® is a registered trademark. RAND is a nonprofit institution that helps improve policy and decisionmaking through research and analysis; its publications do not necessarily reflect the opinions or policies of its research sponsors.

RAND

1700 Main Street, P.O. Box 2138, Santa Monica, California 90407-2138 • Telephone 310-393-0411 • FAX 310-393-4818
1200 South Hayes Street, Arlington, VA • Telephone 703-413-1100 • FAX 703-413-8111

RB-7523 (2001)